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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,746	06/30/2004	Gottfried Lehmann	2002P06190WOUS	6907
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Siemens Corporation Intellectual Property Department 170 Wood Avenue South Iselin, NJ 08830				
			EXAMINER CURS, NATHAN M	
			ART UNIT 2613	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/500,746

Applicant(s)

LEHMANN ET AL.

Examiner

Nathan Curs

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 15, 16 and 21 are objected to because of the following informalities: claims 15 and 16 recite "according to claims 11", and claim 21 recites "according to claims 12"; "claims" should be changed to "claim". Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 11, 17, 18 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 recites "a first optical fiber having... a first optical" and "a second optical fiber having... a second optical signal". This language is confusing. The specification discloses serial first and second optical fibers with first and second optical signals traveling within both fibers, but the claim language seems to isolate the first optical signal to the first fiber and the second optical signal to the second fiber, as if the fibers were parallel containing one signal each. It's not clear what is being claimed.

Claims 17 and 18 recite, " P_{launch} is the launch power... per length of optical fiber". Again, since claim 11 is claiming two fibers each having a length, now also claiming a launch power "per length of optical fiber" seems to require that the two fibers are in parallel, each having a launch power. This is contradictory to the specification, which discloses fibers connected in

Art Unit: 2613

series. There can only be one launch power for an optical signal traveling through fibers connected in series. Is not clear what is being claimed.

Claims 17 and 18 also recite the limitation, "the first to second dispersion compensation unit". There is insufficient antecedent basis for this limitation in the claims.

Claim 21 recites an "optical transmission module" including "an optical fiber and a length of optical fiber having a dispersion compensation unit". Is the optical fiber and length of optical fiber the same fiber? Or are two different optical fibers being claimed, the first as "an optical fiber" and the second as "a length of optical fiber"?

Claim 21 also recites, "an optical transmission system consists of a plurality of optical transmission modules arranged in series". By way of "consists", this amounts to claiming that "an optical transmission system" is made up of **only** a plurality of optical transmission modules arranged in series **and nothing else**. However, in claims 11 and depending claims, more features than this are claimed for "an optical transmission system". Therefore the scope of "optical transmission system" is unclear.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 11-16 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Essiambre et al. ("Essiambre") (US Patent No. 6606176).

Regarding claim 11, Essiambre discloses an optical transmission system, comprising: a first optical fiber having a first length, a first dispersion compensation unit, and a first optical signal, a second optical fiber having a second length, a second dispersion compensation unit, and a second optical signal (figs. 1 and 2 and col. 5, lines 20-63); a data transmission rate at which the first and second optical signals are transmitted (col. 2, lines 61-67); and a pre-compensation unit arranged upstream of the first length of optical fiber for pre-compensating the second optical signal in order to transmit the second optical signal at the second data transmission rate and the pre-compensation unit having a pre-compensating amount of between 0 ps/nm and -2000 ps/nm (fig. 1, col. 2, lines 61-67 and col. 5, lines 20-45), wherein the first dispersion compensation unit compensates the first optical signal as the first optical signal is sent to the second dispersion compensation unit and is dimensioned in such a way that the first optical fiber length to the second optical fiber length are respectively under-compensated by approximately the same under-compensation amount (col. 5, lines 20-63 and col. 6, lines 34-46). Essiambre does not explicitly describe WDM transmission comprising two different data rate signals. However, Essiambre generally discloses WDM transmission using signals "10 Gbps and higher" and 40 Gbps, where 40 Gbps requires pre-compensation (col. 2, lines 44-67). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine a 10 Gbps and a 40 Gbps signal in the WDM system of Essiambre, the 10 Gbps not requiring pre-compensation and the 40 Gbps requiring pre-compensation, since Essiambre generally supports 10 Gbps and higher, and carrying a mixture of 10 Gbps and 40 Gbps signals provides the advantage of supporting different client signal speeds instead of requiring uniform client signal speed for every WDM channel.

Regarding claim 12, Essiambre discloses the optical transmission system according to claim 11, wherein the system is comprised of more than two optical fibers (fig. 1).

Regarding claim 13, Essiambre discloses the optical transmission system according to claim 11, wherein the second data transmission rate is at least double the first data transmission rate (col. 2, lines 44-67).

Regarding claim 14, Essiambre discloses the optical transmission system according to claim 11, wherein the pre-compensation amount is dependent on the size of the launch power of the second optical signal having a second data transmission rate, and on the type of fiber used for transmission (col. 5, line 20 to col. 6, line 11).

Regarding claim 15, Essiambre discloses the optical transmission system according to claims 11, wherein the first and second optical fibers are a standard single mode fiber or a non-zero dispersion-shifted fiber (col. 5, line 64 to col. 6, line 11).

Regarding claim 16, Essiambre discloses the optical transmission system according to claims 12, wherein the optical fibers are a standard single mode fiber or a non-zero dispersion-shifted fiber (col. 5, line 64 to col. 6, line 11).

Regarding claim 19, Essiambre discloses the optical transmission system according to claim 15, wherein the under-compensation amount during the transmission of optical signals via a standard single mode fiber is in the range 10 to 80 ps/nm and transmission of optical signals via a non-zero dispersion-shifted fiber is in the range 5 to 60 ps/nm (col. 6, lines 34-46).

Regarding claim 20, Essiambre discloses the optical transmission system according to claim 12, wherein the lengths of optical fiber in the optical transmission system are between 40 km and 120 km long (col. 4, lines 40-50).

Regarding claim 21, Essiambre discloses the optical transmission system according to one of the claims 12, wherein an optical fiber and a length of optical fiber having a dispersion compensation unit form an optical transmission module, and an optical transmission system

Art Unit: 2613

consists of a plurality of optical transmission modules arranged in series (figs. 1 and 2 and col. 5, lines 20-45).

6. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Essiambre (US Patent No. 6606176) in view of Islam et al. ("Islam") (US Patent Application Publication No. 2006/0188263)

Regarding claim 22, Essiambre discloses the optical transmission system according to claim 11, but does not disclose that the optical transmission system has a bidirectional operating mode. Islam discloses a multi-span bidirectional WDM system using dispersion compensation (paragraphs 0025, 0028 and 0045). Considering Islam, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Essiambre to be a bidirectional system by adding a WDM transmission line communicating in the opposite direction of the line shown in Essiambre fig. 1, to provide the benefit of two-way communication between terminals instead of the more limited one-way communication shown by Essiambre.

Allowable Subject Matter

7. Claims 17 and 18 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, and to overcome the claim objections, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:


Art Unit: 2613

- US Patent Application Publication No. 2002/0191912 – discloses dispersion compensation apparatus and discloses that 40 Gbps transmission requires per-channel compensation.
- US Patent No. 7187868 – discloses a WDM system and dispersion compensation and discloses that higher bit rate signal require more accurate dispersion compensation.

9. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (800) 786-9199.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://paired.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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